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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,238	01/05/2001	Vincent S. Polkus	GEMS:0106/YOD (15-XZ-5566)	3752
7590	10/22/2003		EXAMINER TABATABAI, ABOLFAZI	
Patrick S. Yoder Fletcher, Yoder & Van Someren P.O. Box 692289 Houston, TX 77269-2289			ART UNIT 2625	PAPER NUMBER 

DATE MAILED: 10/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/755,238

Applicant(s)

POLKUS ET AL.

Examiner

Abolfazi Tabatabai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 January 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### **Claim Rejections - 35 USC § 102**

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 9-13, 16-18, 21, 27-30, 34 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Giebeler (U S 5,878,146).

Regarding claim 1, Giebeler discloses an x-ray imaging system to provide for cropping an asymmetrical digital image, the method comprising the step of:

identifying a projection of a radiation beam in an image plane, the projection being asymmetrical with respect to an axis of the image plane (column 8, lines 19-28); and,

processing image data for a portion of a digital detector based upon the identified projection (column 3, lines 1-5 and column 4, lines 32-36).

Regarding claim 2, Giebeler discloses the method wherein the step of identifying the projection includes sensing orientation of a radiation source and computing locations of incidence of the radiation beam in the image plane (column 8, lines 19-28 and 36-41).

Regarding claim 9, Giebeler discloses the method comprising the further step of generating an operator alert if the projection is not encompassed within bounds of the detector (column 14, lines 45-58).

Regarding claim 10, Giebeler discloses the method wherein the radiation beam may be angularly oriented and rotationally shaped with respect to the image plane, and wherein the projection is identified based upon angular orientation and rotational shaping with respect to an orthogonal orientation (column 8, lines 19-28).

Regarding claim 11, Giebeler discloses a method for cropping data in a digital x-ray imaging system, the method comprising the steps of:

orienting a radiation beam to project the beam towards an image plane to impinge the plane asymmetrically with respect to an axis of the plane and to impinge a region of a detector extending in the image plane, the region being smaller than an imaging surface of the detector (column 8, lines 19-28; column 2, lines 46-59 and column 3, lines 3-6);

computing an image area over which the beam impinges the plane (column 14, lines 16-26); and,

processing image data from the region of the detector including the image area (column 2, lines 46-59 and column 3, lines 3-6).

Regarding claim 12, Giebeler discloses the method wherein the radiation beam is oriented by angular positioning of a radiation source (column 8, lines 19-28).

Regarding claim 13, Giebeler discloses the method wherein the radiation beam is oriented by rotational positioning of a radiation source (column 3, lines 6-10).

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Regarding claim 16, Giebeler discloses the method wherein the image area is computed by determining projections of portions of the beam upon orientation of the beam(column 14, lines 16-26 and column 15, lines 64-67).

Regarding claim 17, Giebeler discloses the method comprising the step of determining whether the image area is encompassed by the imaging surface of the detector (column 11, lines 50-55).

Regarding claim 18, Giebeler discloses the method comprising the step of generating an operator alert if the image area is not encompassed by the imaging surface of the detector (column 14, lines 41-47).

Regarding claim 21, Giebeler discloses a method for processing image data in a digital x-ray imaging system, the method comprising the steps of:

orienting a radiation beam producing assembly to project an x-ray beam towards an image plane to impinge the plane asymmetrically with respect to an axis of the plane and to impinge a region of a detector extending in the image plane, the region being smaller than an imaging surface of the detector (column 8, lines 19-28; column 2, lines 46-59 and column 3, lines 3-6);

sensing orientation of the radiation beam producing assembly (column 13, lines 13-15 and column 15, lines 64-67);

computing an image area over which the beam impinges the plane (column 14, lines 16-26);

generating the x-ray beam (column 8, lines 19-28); and,

processing image data from the region of the detector including the image area (column 2, lines 46-59 and column 3, lines 3-6).

Claim 27, is similarly analyzed as claim 17 above.

Claim 28, is similarly analyzed as claim 18 above.

Regarding claim 29, Giebeler discloses the method comprising the step of inhibiting generation of the x-ray beam if the image area is not encompassed by the imaging surface of the detector (column 5, lines 52-65).

Claim 30, is similarly analyzed as claim 21 above.

Claim 34, is similarly analyzed as claim 17 above.

Claim 35, is similarly analyzed as claim 18 above.

### **Claim Rejections - 35 USC § 103**

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

4. Claims 3-8, 14, 15, 19, 20, 22-26, 31-33 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giebeler (U S 5,787,146) as applied to claims 1, 11, 21 and 30 in view of Deckman et al (U S 4,891,829).

Regarding claim 3, Giebeler is silent about specific details regarding the step of identifying the projection includes sensing orientation of a collimator and computing locations of incidence of the radiation beam in the image plane.

In the same field of endeavor, however, Deckman discloses a system for utilizing an electro-optic detector in microtomography comprising the step of identifying the projection includes sensing orientation of a collimator and computing locations of incidence of the radiation beam in the image plane (column 14, lines 1-35).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use sensing orientation of a collimator and computing locations of incidence of the radiation beam in the image plane as taught by Deckman in the system of Giebeler because Deckman provides Giebeler a method for using an imaging electro-optic detector in acquiring tomographic data. By using an electric-optic detector instead of conventional scintillation detectors spatial resolution and physical scale in reconstructed images can be significantly improved.

Regarding claim 4, Deckman discloses the method wherein the projection is identified based upon spatial location of a collimator aperture and on a transformation matrix for a radiation source (column 15, lines 55-65 and column 16, lines 45-49).

Claim 5, is similarly analyzed as claim 4 above.

Regarding claim 6, Deckman discloses the method wherein processing the image data includes sampling image data from the detector only from an area encompassing the projection (column 5, lines 60-65 and column 6, lines 3-25).

Regarding claim 7, Deckman discloses the method wherein processing the image data includes storing only image data from an area encompassing the projection (column 23, lines 8-10).

Regarding claim 8, Deckman discloses the method comprising the further step of determining whether the projection is encompassed within bounds of the detector (column 5, lines 60-65).

Regarding claim 14, Deckman discloses the method wherein the radiation beam is oriented by angular positioning of a collimator (column 14, lines 1-55).

Regarding claim 15, Deckman discloses the method wherein the radiation beam is oriented by rotational positioning of a collimator (column 14, lines 1-55).

Regarding claim 19, Deckman discloses the method wherein only image data for the region is sampled from the detector (column 6, lines 3-25).

Regarding claim 20, Deckman discloses the method wherein the region includes portion of an image matrix of rows and columns of pixels, the portion of the image matrix fully encompassing the image area (column 5, lines 1-7 and 60-65).

Regarding claim 22, Deckman discloses the method wherein the radiation beam producing assembly includes a radiation source and a collimator (column 14, lines 1-55).



Regarding claim 23, Deckman discloses the method wherein the radiation source and the collimator are configured to allow freedom of orientation with respect to one another(column 6, lines 3-11).

Regarding claim 24, Deckman discloses the method wherein the orientations of the radiation source and the collimator are separately sensed in accordance with respective coordinate systems (column 15, lines 16-54).

Regarding claim 25, Deckman discloses the method wherein the image area is computed based upon transformation matrices for the coordinate systems (column 15, lines 55-65 and column 16, lines 45-49):

Regarding claim 26, Deckman discloses the method wherein the image area is computed based upon projection of the beam through an aperture in a collimator(column 16, lines 42-49).

Regarding claim 31, Deckman discloses the system wherein the radiation source assembly includes an x-ray source and a collimator (column 14, lines 1-10).

Regarding claim 32, Deckman discloses the system wherein the radiation source and the collimator are orientable with respect to one another (column 14, lines 1-55).

Claim 33, is similarly analyzed as claim 26 above.

Regarding claim 36, Deckman discloses the system wherein the control circuit is further configured to inhibit initiation of an x-ray exposure if the image area is not encompassed by the imaging surface (column 20, lines 7-17).

### **Other prior art Cited**

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Frohlich et al (U S 6,516,046 B1) disclose exact patient positioning by comparing reconstructed x-ray images and linac x-ray images.

Ashburn (U S 5,742,060) discloses medical system for obtaining multiple images of body from different perspective.

Annis (U S 4,809,312) discloses method and apparatus for producing tomographic images.

### **Contact Information**

6. any inquiry concerning this communication or earlier communications from the Examiner should be directed to ABOLFAZL TABATABAI whose telephone number is (703) 306-5917.

The examiner can normally be reached on Monday through Thursday from 9:30 a.m. to 7:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Bhavesh Mehta M, can be reached at (703) 308-5246.

**Any response to this action should be mailed to:**

Assistant Commissioner for Patents  
Washington, D.C. 20231

**or faxed to:**

(703) 872-9306 (for **formal** communications; please mark  
"EXPEDITED PROCEDURE")

**Hand delivered responses** should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA. Sixth Floor (Receptionist).

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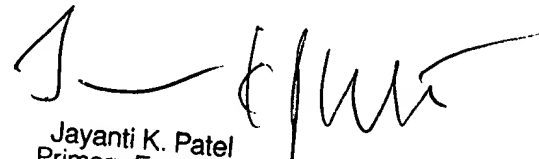
Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 305-4750

Abolfazl Tabatabai

Patent Examiner

Group Art Unit 2625

October 16, 2003



Jayanti K. Patel  
Primary Examiner